

CLAIMS

What is claimed is:

1. A method for selectively releasing locks on data, comprising the steps of:
 2. (a) providing at least one savepoint in a transaction, wherein at least one lock is assigned to the at least one savepoint and at least one lock is assigned to the transaction;
 4. (b) rolling back the transaction to the at least one savepoint; and
 5. (c) releasing the at least one lock assigned to the at least one savepoint, wherein the at least one lock assigned to the transaction is maintained.
1. 2. The method of claim 1, wherein the providing step (a) comprises:
 2. (a1) providing a sequence of savepoints in the transaction, wherein at least one lock is assigned to each of the savepoints and the at least one lock is assigned to the transaction.
1. 3. The method of claim 1, wherein the rolling step (b) comprises:
 2. (b1) rolling back the transaction to one of a sequence of savepoints.
1. 4. The method of claim 1, wherein the releasing step (c) comprises:
 2. (c1) releasing at least one lock assigned to one of a sequence of savepoints to which the transaction is rolled back; and
 4. (c2) releasing at least one lock assigned to subsequent savepoints, wherein the at

5 least one lock assigned to the transaction and at least one lock assigned to preceding
6 savepoints are maintained.

1 5. The method of claim 4, further comprising:
2 (c3) releasing another of the sequence of savepoints.

1 6. The method of claim 5, further comprising:
2 (c4) reassigning at least one lock assigned to the another of the sequence of
3 savepoints to a preceding savepoint.

1 7. The method of claim 5, further comprising:
2 (c4) maintaining knowledge of the released another of the sequence of savepoints,
3 such that if the transaction is rolled back to a preceding savepoint, the at least one lock
4 assigned to the released another of the sequence of savepoints is released.

1 8. A method for selectively releasing locks on data, comprising the steps of:
2 (a) providing a sequence of savepoints in a transaction, wherein at least one lock
3 is assigned to each of the savepoints and at least one lock is assigned to the transaction;
4 (b) rolling back the transaction to one of the sequence of savepoints;
5 (c) releasing the at least one lock assigned to the one of the sequence of
6 savepoints; and
7 (d) releasing the at least one lock assigned to subsequent savepoints, wherein the

8 at least one lock assigned to the transaction and the at least one lock assigned to preceding
9 savepoints are maintained.

1 9. A computer readable medium with program instructions for selectively
2 releasing locks on data, comprising the instructions for:

3 (a) providing at least one savepoint in a transaction, wherein at least one lock is
4 assigned to the at least one savepoint and at least one lock is assigned to the transaction;
5 (b) rolling back the transaction to the at least one savepoint; and
6 (c) releasing the at least one lock assigned to the at least one savepoint, wherein
7 the at least one lock assigned to the transaction is maintained.

1 10. The medium of claim 9, wherein the providing instruction (a) comprises
2 instructions for:

3 (a1) providing a sequence of savepoints in the transaction, wherein at least one
4 lock is assigned to each of the savepoints and the at least one lock is assigned to the
5 transaction.

1 11. The medium of claim 9, wherein the rolling instruction (b) comprises
2 instructions for:

3 (b1) rolling back the transaction to one of a sequence of savepoints.

1 12. The medium of claim 9, wherein the releasing instruction (c) comprises

2 instructions for:

3 (c1) releasing at least one lock assigned to one of a sequence of savepoints to
4 which the transaction is rolled back; and

5 (c2) releasing at least one lock assigned to subsequent savepoints, wherein the at
6 least one lock assigned to the transaction and at least one lock assigned to preceding
7 savepoints are maintained.

1 13. The medium of claim 12, further comprising instructions for:

2 (c3) releasing another of the sequence of savepoints.

1 14. The medium of claim 13, further comprising instructions for:

2 (c4) reassigning at least one lock assigned to the another of the sequence of
3 savepoints to a preceding savepoint.

1 15. The medium of claim 13, further comprising instructions for:

2 (c4) maintaining knowledge of the released another of the sequence of savepoints,
3 such that if the transaction is rolled back to a preceding savepoint, the at least one lock
4 assigned to the released another of the sequence of savepoints is released.

1 16. A computer readable medium with program instructions for selectively
2 releasing locks on data, comprising the instructions for:

3 (a) providing a sequence of savepoints in a transaction, wherein at least one lock

4 is assigned to each of the savepoints and at least one lock is assigned to the transaction;

5 (b) rolling back the transaction to one of the sequence of savepoints;

6 (c) releasing the at least one lock assigned to the one of the sequence of

7 savepoints; and

8 (d) releasing the at least one lock assigned to subsequent savepoints, wherein the

9 at least one lock assigned to the transaction and the at least one lock assigned to preceding

10 savepoints are maintained.

1 17. A system, comprising:

2 a transaction, wherein at least one lock is assigned to the transaction; and

3 at least one savepoint associated with the transaction, wherein at least one lock is

4 assigned to the at least one savepoint, wherein in a rollback to the at least one savepoint, the

5 at least one lock assigned to the at least one savepoint is released, wherein the at least one

6 lock assigned to the transaction is maintained.

1 18. A system, comprising:

2 a data manager for performing tasks on data, wherein the tasks comprise:

3 providing at least one savepoint in a transaction,

4 assigning at least one lock to the at least one savepoint,

5 assigning at least one lock to the transaction,

6 responding to a recovery manager request for a rollback to the at least one

7 savepoint by undoing operations performed since the at least one savepoint according to a

8 log, and

9 requesting to a lock manager for release of the at least one lock assigned to
10 the at least one savepoint;

11 the lock manager for creating and maintaining the at least one lock assigned to the at
12 least one savepoint and the at least one lock assigned to the transaction, and for releasing the
13 at least one lock assigned to the at least one savepoint when the transaction is rolled back to
14 the at least one savepoint;

15 a log manager for storing information on the tasks in the log, wherein the log
16 comprises information concerning data and schema modifications, and the at least one
17 savepoint; and

18 the recovery manager, wherein the recovery manager processes the request for the
19 rollback to the at least one savepoint by advising the data manager of the request.